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## AN ABBREVIATED HISTORY OF RADIOACTIVE OPERATIONS AT U. S. RADIUM CORPORATIONS BLOOMSBURG FACILITY

Radioactive operations began in the Bloomsburg facility in 1948-49, with the relocation of USRC's radium operations from Brooklyn to the Bloomsburg plant. The isotopes in use at that time were primarily radium-226, and a little polonium-210. Coinciding with the move to Bloomsburg came the availability of man-made isotopes. The early 1950's saw the expansion of USRC's isotope products to include civil defense check sources and radiation sources utilizing cesium-137 in large quantities. Project F in the same time period resulted in the production of some 500,000 deck markers for the US Navy involving an extensive strontium-90 production line. Radium-226 was being used during this same time period primarily for clock and watch dials and hands; however, radium rope, some deck markers, and high level neutron and radiation therapy sources were also being manufactured. Other isotopes and government contracts were worked on during this time period.

As time went by, and other isotopes became available, the R&D group that was formed in Bloomsburg carried out development work with some twenty-odd different isotopes. Although most isotopes were handled only in small quantities, several became major sources of revenue for the company. Tritium, Carbon-14, and Thallium-204, were used for light sources; Nickel-63 and Tritium were developed for low level ionization sources; Krypton-85 was utilized for light sources,

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radiation sources and for beta sources. In the early 60's work began with americium-241, a replacement for radium-226, in certain applications.

In 1968, the Company decided to discontinue all operations with radium. In 1969, all isotope business, except the Tritium business, was sold to Nuclear Radiation Developments in Grand Island, N.Y. At this time, a new building was erected to house the Tritium production operation. From this time on (July, 1969) the only isotope handled in production has been Tritium, and all radioactive operations have been carried out in the new structure. The basic Health Physics program established at this time remains in use today with only minor changes in the past nine years.

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## PREFACE

In July of 1969, U.S. Radium Corp. (USRC) ceased production work with all isotopes other than Tritium. At this time, a new USAEC license was obtained for production operations carried out in a new facility constructed at the Bloomsburg site. With these steps taken, decontamination of facilities used under USAEC license 37-00030-02, began.

Attached are several building drawings and a site plan. These are marked to identify areas used for production and R&D work, prior to 1969. Reference to these drawings will aid in understanding the nature and relationship of the various decontamination activities both completed and planned for the future. Some walls have been relocated since operations have ceased; therefore, area delineations may not correspond to partitions as shown on drawings.

Decontamination included initial surveys, dismantling of hoods and hot cells, removal of floor coverings, etching and chipping of concrete floors, removal of wooden floors including joists, removal of contaminated ductwork and large absolute filter banks and housings, excavation of contaminated soil, and final scrub down to unrestricted area limits established in Health Physics Program Rev I (copy attached).

## MAIN BUILDING

At the close of operations in July of 1969, Building #1 housed 90% of the isotope handling areas.

Area A - Alpha lab housed all operations involving Ra-226, Po-210, and Am-241 and any other alpha emitting isotopes used in R&D.

Cost - Outside Contractor \$19,000

Inside Labor 10,000

Wasted disposal 5,000

Area B - Cesium-137 lab - housed only work involving Cesium-137. Decontamination began in 1967 and completed by September, 1969.

Cost - Outside contractor - see A above

Labor \$5,000

Waste disposal 3,000

Area C - Annex - housed miscellaneous Beta emitters C-14, Tl-204, H-3, Ni-63, and other miscellaneous isotopes. Decontamination began in Spring of 1969, and completed by September, 1969.

Cost - Labor \$8,000

Waste disposal 3,500

Area D - Strontium-90 lab - housed all Strontium work after the early 1960's. Decontamination began in 1968, and was completed by September, 1969.

Cost - Labor \$6,000

Waste disposal 2,200

Area E - Hand Painting - housed all operations involving (2nd Floor) Tritium hand painting until July of 1969, when

this operation was moved to the new Nuclear Building. Also housed radium hand painting operations for some period prior to 1969. Decontamination began in May of 1969, and was completed by September, 1969.

Cost - Labor	\$10,000
Waste disposal	4,000

Remaining areas of Building #1 surveyed completely by January of 1970, and decontaminated where necessary.

Cost - Labor	\$4,500
Waste disposal	500

Contaminated insulation between ceiling and roof removed  
by outside contractor in Summer of 1969.

**Cost - \$6,000**

Last piece of old contaminated ductwork was removed in Summer of 1976, by outside contractor

**Cost - \$6,000**

Total survey of Building #1 was completed by July of 1971.

All areas have been freed for unrestricted area use except the attic over the former hand painting area and a crawl space beneath that same area. Both attic and crawl space are either sealed off and posted or are inaccessible.

## ETCHING BUILDING

At the close of operations in July 1969, the only isotopes handling outside of Building #1 was being performed in Area F in this building. Certain Tritium screening operations were carried out here until the Summer of 1969, when they were

relocated in the new Nuclear Building. Prior to 1967, many areas in this building were decontaminated. Detailed records of this work are not available.

Periodic surveys have assured the maintenance of unrestricted area levels of contamination and have identified several areas of low level contamination. These areas have either been restricted, or some other means of protection have been instituted, notably in Area G, where a layer of plywood has been laid over a contaminated wooden floor and the area posted and designated for storage only.

#### ADHESIVES LAB

Original surveys of this building showed low level alpha, even though no known radioactive operations were performed here. Decontaminated during the summer of 1971.

Cost - Labor \$750

Waste disposal 125

#### EXTERIOR AREAS

#1 Dump identified in 1971, as a contaminated area.

~~12,000-pounds of soil contaminated with radium-226, removed by October of 1972.~~

#### SUMMARY

Since the discontinuance of operations involving isotopes other than Tritium at USRC in Bloomsburg, some \$95,000 has been spent in decontamination of what was the primary production facility. These funds did not include any repairs, reconstruction or replacement of equipment necessitated by the decontamination program. In addition, these included only those items established as separate projects and did not include items or work done on a part time or occasional basis.